IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA,	
Plaintiff,	
vs.	4:05-CV-00329-TCK-SAJ
TYSON FOODS, INC., et al,	
Defendants.	

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VOLUME I OF THE VIDEOTAPED DEPOSITION OF SAMUEL MYODA PhD, produced as a witness on behalf of the Plaintiff in the above styled and numbered cause, taken on the 18th day of March, 2009, in the City of Tulsa, County of Tulsa, State of Oklahoma, before me, Lisa A. Steinmeyer, a Certified Shorthand Reporter, duly certified under and by virtue of the laws of the State of Oklahoma.

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the detection methodologies, and then the sonochemical aspect of it, we actually -- pardon me -- disinfected, actually killed the bacteria with sound waves.

Q Okay. What would you consider to be your formal training in microbiology? 09:32AM

A Well, both my undergraduate education and through my work as a PhD, it was a combined project with folks in the biology department and the department of engineering. 09:33AM

Q So could you define for me what was -- how you were formally trained in the area of microbiology?

A Well, microbiology is an aspect of biology. My environmental science degree focused on biology. So as an undergraduate I spent quite a bit of time 09:33AM in the laboratory, in class work. In my work as a graduate student, we -- you know, a big aspect of this was microbiology, taking a look at the pathogens, how to detect them. So I was trained. One of the advisors of my committee was in the 09:33AM department of biology, as well as my father is a microbiologist, who was a director of research at Alfred I. duPont Institute for many, many years, and he advised me and he trained me.

Q Your father? 09:33AM

A My father.
Q So a lot of your formal training in microbiology is from your father?
A Part of it is.
Q What is your formal training in molecular biology? 09:34AM
A That I consider, you know, the molecular biology, my training in molecular and micro derived from the same sources. In addition, Dr. Samadpour has offered me much guidance and training in molecular biology. 09:34AM
Q Okay. So did you take any classes in molecular biology in college or graduate school?
A In molecular, yes. In undergraduate, there was classes dealing with molecular biology, yes. 09:34AM
Q Did you do any laboratory work in molecular biology when you were at the university, either undergraduate or graduate?
A Absolutely.
Q Okay. What work did you do in the lab on molecular biology when you were at the university? 09:34AM
A PCR detection of Cryptosporidium.
Q Anything else?
A We looked at the detecting E. coli. We looked at detecting Giardia. 09:35AM

Q Through PCR?
A Correct.
Q Okay. What PCR method -- could you give me the steps that you used when you developed your PCR assay for Cryptosporidium? 09:35AM
A Are you asking me to regurgitate the details of the entire assay?
Q I want you to tell me the step-wise approach you employed in order to develop your PCR primer and your assay for using that primer. 09:35AM
A The assays and the primers or the sequences are published. Software is utilized to, you know, take a look at the sequences, and the software then suggests the primer sets, which you then try out and see if they work. 09:36AM
Q Okay. Is that this methodology you employed for all of the PCR work you did while you were at the university?
A No. Some of the PCR you take a look at the published work. People publish primer sets. People 09:36AM publish assays, and you use the assays that you know that work.
Q Okay. Did you -- have you ever developed a new primer assay for a molecular or source-specific microbial source? 09:36AM

MR. TODD: Object to form.

A To -- we develop new primer sets every day.

Q Okay. Have you done it?

A I am actively involved in that. Do I test every primer, do I sit in front of the computer and do all the searches, no. 09:36AM

Q Do you work --

A I take a look and I advise on the work, and I direct the work now.

Q Okay. Have you in a lab ever developed a source-specific sequence like for a particular DNA sequence for PCR or qPCR analysis? 09:37AM

A Bacteria-specific, not source-specific.

Q Okay, and what bacteria-specific PCR analysis have you developed; what was unique? 09:37AM

A The tests that IEH utilized for pathogen detection have unique and proprietary targets.

Q Can you tell me one of the targets, the DNA target that you developed a specific primer on for pathogen identification? 09:38AM

A We developed a primer for -- we have a multiple primer set that we and -- I developed as part of a team for 0157.

Q Okay. When you did this work, did you follow molecular protocols for specific PCR assays that 09:38AM

were published and provided?
A I don't understand, you know, which protocols you're referring to.
Q Okay. When you duplicated protocols -- I'm going to go back to your college -- 09:38AM
A Okay.
Q -- and university experience.
A Uh-huh.
Q When you duplicated protocols that were published, you said you duplicated PCR analysis? 09:38AM
A Sure, uh-huh.
Q Did you follow the protocols, specific protocols that were provided for those assays when you tried to you duplicate their work?
A Yes. 09:38AM
Q Did you follow their thermocycling protocol?
A I did.
Q Their DNA extraction protocols?
A In many cases, yes.
Q Okay. Was it important to follow these 09:39AM methods accurately in order to get accurate results?
A Some aspects and methods, it was critically important. Others it was not.
Q And how did you determine when it was critically important and when was it not? 09:39AM

A DNA extraction can be done many ways. The efficiency of your extraction can be measured. The critical components to me are the primer sets --

Q Okay. When you do DNA extraction --

A -- and things related to the primer sets in the PCR reaction. 09:39AM

Q When you do DNA extraction, is it important to do a negative control?

A It's important to do controls with any of the work you do in the lab. 09:40AM

Q So it's always important to do negative controls when you do work in a lab?

A It's important to do controls -- negative or positive controls with all work you do in your lab.

Q Okay. I'm trying to understand the extent of your lab experience at IEH. Do you actually work in the lab at IEH? 09:40AM

A Not so much anymore, no.

Q Okay. So did you work in the lab when you were at the -- did you ever work in the lab at IEH? 09:40AM

A Yes.

Q Okay, and so you've worked in the lab developing these particular assays at IEH?

A Yes. I went and -- my role is -- you know, I oversee the development of quite a few aspects in 09:40AM

the company, production, assay development, operations.

Q Okay. As far as lab experience --

A Uh-huh.

Q -- since you've been at IEH -- 09:41AM

A Uh-huh.

Q -- have you actually performed any PCR analysis yourself?

A Absolutely.

Q When was the last time? 09:41AM

A Last time, probably five or six weeks ago.

Q And for this project or some other project?

A For another project.

Q Did you do any of the PCR analysis for this project in the lab? 09:41AM

A I did not do any for this project, no. We had a team that worked on this project.

Q And who were the primary people who worked on the team in this project?

A Well, I took the liberty of writing down the 09:41AM names for the court reporter because I could butcher the spelling. Dr. Bala Kottapalli, Chandra Bapanpally. That's why we're on a first-name basis with folks that I work with. Dr. Tanveer Haider, Dr. Vika Beskhlebnaya, Connor Tyler, Greg Ma, Dr. 09:42AM

Ali Fazeli and Mike McDowell.

Q May I see the paper you are reading from?

A Sure.

Q This is a list of all the folks that work in your lab? 09:42AM

A Those are the primary folks that worked on this project. I'm sure they were supported by some technicians and clerical staff.

Q And which of these people would be the leader of the lab, the head of lab? 09:42AM

A None of these people is -- I would consider the head of the lab. These were folks that were in charge of different aspects of the lab area and in charge of their groups. For example, Vika, pardon me, was in charge of the PCR. 09:42AM

Q Who was that; who was in charge of the PCR?

A Dr. Beskhlebnaya.

Q Is the PCR person?

A She -- yeah.

Q And what about for qPCR? 09:43AM

A That would be Chandra Bapanpally.

Q Okay, and what were the roles of the other folks on your list?

A Dr. Haider was and is in charge of our sequencing group. Dr. Fazeli, Vitech and 09:43AM

when I was developing qPCR assays.
Q Yes.
A And my answer is that I personally was not responsible for the 16S target.
Q Okay.
A These are team --
Q Go ahead. I'm sorry.
A Well, there -- we have a group of people that are more actively involved in the lab. This was not one of my particular -- I didn't sit there on the bench and do that. 09:50AM
Q Okay. Does the IEH lab use that particular 16S gene for targeting for qPCR?
A We don't commercially use that to target anything at the moment. We use it in research. We do not -- 09:50AM
Q What do you mean by research?
A Well, it's a tool. We're constantly, you know, evaluating sequences, developing methods. IEH (sic) is a large part of IEH's research. 09:51AM
Q Could you describe for me the IEH lab where the PCR and qPCR work was performed for your work in this case?
A In Lake Forest Park, Washington.
Q Is it at the address in your resumT there? 09:51AM

A It is.
Q Okay, and is it -- can you describe the building or the structure it's in?
A Three-story building, two floors of laboratories. Probably 60 folks that work there. 09:51AM
Offices on the top floor. You know, the bottom is lab. Second floor is lab. It's separated. We have a CLEA certified clinical laboratory in one portion of the building, and we have a sequencing room. We have a PCR room, production facilities, clean rooms. 09:52AM
What more would you like to know?
Q Are you saying the labs are on two different floors?
A Uh-huh.
Q Okay. If I gave you a piece of paper, could you draw for me a simple schematic of how the lab is laid out? 09:52AM
A Sure.
Q And do you need two for two different floors?
A I can do it on this if you'd like. 09:52AM
Q I've marked Exhibit No. 2 and I've give you my pen if that would be good.
A I have one here.
Q And would you please just lay out the schematic of the labs and then label the rooms for 09:53AM

their function or functions if there's more than one, and if you'd show walls and doorways, that kind of thing.

(Whereupon, a discussion was held off the Record.) 09:58AM

A Okay.

Q Could you explain that for us, please, that you've drew there for me?

A Okay. I think -- I've left out the closets and little things like that. 09:58AM

Q Sure.

A This will be a general overview. We have three stories.

Q Uh-huh.

A The top is all office space, with the exception of we have one room that we calibrate pipettes and balances. We have 40 locations, and we always certify our pipettes every three to six months. We rotate pipettes. So one of those rooms upstairs is for that. 09:58AM

The middle floor, you'll come in and there's the front door right here, and you go into the reception area, and we have offices back here. If you come in the front door and to the left, we have a general lab, general microbiology. We do quite a 09:58AM

few things there.
Q Was any of the work that you performed in this case performed in the general lab?
A Yes.
Q Okay. What work, and if you'd just kind of label the work that was performed in this lab, general lab for the work in this case. 09:59AM
A Sure. Mike works right here.
Q Okay.
A And he does all the cultures and the plating. 09:59AM
Q Okay.
A So he would have done all the streaking and the isolation of the bacteria right here.
Q Okay. Any other work performed in this case in the general lab? 09:59AM
A Yes. Over here we have a bank of thermocyclers.
Q What are those for?
A PCR.
Q Okay. Is there any wall between where Mike works and the thermocyclers? 09:59AM
A There is no wall between those.
Q All right, and what's the distance between the thermocyclers and Mike's location?
A Oh, it's probably 30 to 40 feet. 09:59AM

Q Okay. Any other work in the general lab that was performed as the -- for the work in this case?

A Maybe when we restreaked some of the isolates to send, it would have been done up here.

Q Could you be a little more specific about restreaking some of the isolates to send? 10:00AM

A Well, we archived material, and we were asked, I guess by you, to provide those. So we, you know, archived them in the freezer.

Q Okay. 10:00AM

A So we have to thaw them out, restreak them and regrow them up so we can give you the cultures.

Q Are you able to regrow the cultures after they've been frozen?

A Sure. 10:00AM

Q What temperature were they frozen at?

A They're frozen at minus 80, and they include glycerol so -- as a cryoprotectant so they remained viable.

Q Okay. Anything else done in the general lab for this case? 10:01AM

A I'm thinking what -- I'm thinking through now exactly what we did.

Q Sure.

A For the most part, I think that's what was 10:01AM

done there.
Q You mentioned thermocyclers. Is that for the PCR?
A PCR.
Q Would you mark PCR on that? 10:01AM
A Sure.
Q Okay, and what about the third or the lower floor then, sir; what lab work was done there? Could you kind of go over the general schematic there, sir? 10:01AM
A Sure. Well, on the lower floor starting in the corner we have the autoclave room where we will sterilize all the glassware, you know, the equipment and that kind of thing. This is a CLEA certified clinical laboratory. We do some of the clinical 10:02AM work that IEH and MEI performs. The room over here is PFGE room. We have a bank of, oh, I'd say 25 to 30 PFG machines right here.
Q Could you give us a layman's description of a PFGE machine? 10:02AM
A Pulsed field gel electrophoresis. It's similar to gel electrophoresis when you are separating DNA. The difference with pulsed field is instead of the current flowing in a single direction, it pulses along two axes so you get a 10:02AM

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better discrimination of the different fragment lengths of the DNA.

Q Okay. I'm going to pause us now before we go to the rest of the this and take our break to change the tape. 10:02AM

A Oh, okay, sure.

VIDEOGRAPHER: We are now off the Record. The time is 10:02 a.m.

(Following a short recess at 10:02 a.m., proceedings continued on the Record at 10:15 a.m.)

VIDEOGRAPHER: We are back on the Record. The time is 10:15 a.m.

MR. TODD: David, during the break we checked on the more recent CV that Dr. Myoda 10:16AM referenced, and you'll find it at Myoda 003794 through 96.

MR. PAGE: Thank you.

MR. TODD: Sure.

Q Dr. Myoda, before the break we were looking at 10:16AM the diagram you did on Exhibit 2 --

A Yes.

Q -- and we started with the lower floor, but I didn't ask you to identify the work that's done on the middle floor. We talked about this left side 10:16AM

that letter or the letter itself was shared with the reviewers?

A I doubt it, but I do not know that for a fact.

Q What was your purpose of writing that letter?

A I was asked to draft a letter indicating to AEM that this work was part of a lawsuit, and some of my evaluations or critique, if you will, of that work. 03:40PM

Q Have you ever drafted such a letter either before or since that time? 03:40PM

A I have not.

Q Did you suggest that this letter be sent to Dr. Harwood's department head and other members of the university where she's employed?

A I suggested that it be cc'd to the editorial board of AEM, I believe her university, to her, to a variety of folks that were involved in this process. 03:40PM

Q Was there anyone else that you talked to that is disappointed, your word, in Dr. Harwood's activity in this case other than Dr. Samadpour and some people of the State of Delaware? 03:41PM

A No.

Q Do you know Mike Sadowsky?

A I do.

Q Who is he? 03:41PM

A He and I actually co-authored a paper. He is a researcher in the MST field.
Q What is his reputation?
A He has a good reputation.
Q Do you think he's a careful and meticulous researcher? 03:41PM
A I've found him to be so, yes, sir.
Q Can we turn to Page 3 of this report, please? At the bottom of the page, there's a sentence that begins wildlife, almost like four lines from the bottom. Would you read that for the Record, please? 03:42PM
A Wildlife is often assumed to be a relevant source of pollution in cases where no obvious contribution could be assigned to human activity and livestock farming. 03:42PM
Q Do you have an understanding of what the EPA is trying to convey in that statement?
MR. TODD: Object to form.
A I'm sorry. Could you --
(Whereupon, the court reporter read back the previous question.) 03:42PM
A Just the statement -- I believe you have to look before and after for the context of that statement. You know, the following statement, due to the variety of potential fecal sources impacting 03:43PM

watersheds, fecal source identification is a challenging task that often requires multidisciplinary teams to effectively implement. You know, I think that, along with the sentences previous to this, the one you had, just indicate that it's a complex -- a complex question to answer. Source identification is complex. When it's not obvious, the potential is there for wildlife to be a source, something you don't see. It doesn't really address contributions but suggests that it could be a source. 03:43PM 03:43PM

Q Does that sentence that you just read --

A Uh-huh.

Q -- indicate that wildlife would be secondary as a relevant source of pollution if there are obvious contributions from human activities and livestock farming? 03:44PM

A I don't believe it indicates that it's secondary at all. I don't see how you can draw the conclusion about the different waste loads from each source from this sentence at all. 03:44PM

Q Let's take our break.

VIDEOGRAPHER: We are now off the Record. The time is 3:43 p.m.

(Following a short recess at 3:43 p.m., 03:59PM

proceedings continued on the Record at 3:58 p.m.)

VIDEOGRAPHER: We are back on the Record. The time is 3:58 p.m.

Q Mr. Myoda, I'd like you to turn to Page 6 of your report. In the upper part of Page 6, there's a statement I'd like you to read for the Record and then I want to ask you some questions about it. It's about the fourth line down that says the issue of different sources. Would you read that sentence, please? 03:59PM

A The issue of different sources was addressed in the EPA 1994 Water Quality Standards Handbook that allowed a state to discount all indicator bacteria derived from non-human sources when making regulatory decisions. 04:00PM

Q Could you tell me what you mean by that statement?

A Well, the -- to answer your question, you have to take a step back and go back to the Cabelli and DeFore work that was published in the '86 guidance, 04:00PM EPA guidance document, and that is the foundation for the water quality standards, and that work was the work that attempted to correlate the indicator concentrations with the risk levels to swimmers, folks engaging in primary contact recreation. Now, 04:00PM

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VOLUME II OF THE VIDEOTAPED

DEPOSITION OF SAMUEL MYODA, PhD, produced as a witness on behalf of the Plaintiff in the above styled and numbered cause, taken on the 19th day of March, 2009, in the City of Tulsa, County of Tulsa, State of Oklahoma, before me, Lisa A. Steinmeyer, a Certified Shorthand Reporter, duly certified under and by virtue of the laws of the State of Oklahoma.

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Q -- how is it that you didn't apparently try to enforce rigorous sampling collection protocols on the samples you received of the dirty and clean litter?

MR. TODD: Object to the form. 09:47AM

A Well, just as Dr. Harwood didn't do every piece of work that she reported, I didn't do every piece of work that I offered opinion on. I have staff, and Greg Ma is responsible for those type of things. So, you know, I trust his judgment and I 09:47AM would have to refer to him. If now the concern is unsterile or if it was a styrofoam cup, my gosh, if it got contaminated with a biomarker from a styrofoam cup, then it just goes to show how really non-specific it is. 09:48AM

Q Well, so your -- you wouldn't require use of sterile correction devices in order to do proper sampling?

A I did not say that.

Q Let me hand you what's been marked as Exhibit 18. I want you to view that, Doctor, and tell me whether or not that's the collection of all of your -- I'll call it chemical of concern information concerning the unused and used litter samples. 09:48AM

A Okay. This is a copy of an affidavit of 09:48AM

Connie Snider.

Q Okay. Would you look at all the documents? I tried to put together documents that you produced to us that seem to relate to the collection of the clean and unclean or dirty litter samples. 09:49AM

A Okay.

Q And I want to ask you whether this is the collection of documents that relate to the chain of custody for collection of those samples.

A Okay. I've reviewed these. Now, sorry. What was the question? 09:49AM

MR. PAGE: Would you repeat the question for the witness, please?

(Whereupon, the court reporter read back the previous question.) 09:51AM

A These are documents that I believe we produced regarding this chain of custody. This isn't a complete set.

Q It is not?

A It is not. 09:51AM

Q What's missing?

A Our sample receiving information, our acceptance of the samples, our log-in of the samples.

Q Anything else? 09:51AM

A I would have to take a look. This is incomplete.

Q Well, sir, this is your work, so I'm just asking you, can you think of anything else that's missing from this chain of custody for these samples other than your sample receipt document? 09:51AM

A This is -- you asked me if this is a complete list. My answer is no, it is not. I can think of off the top of my head the sample receiving documents, our log-in documents on these. 09:51AM

Q Okay.

A There may be more. This is an incomplete set, sir.

Q Is there anything missing between the point of sample collection and delivery to your lab to your knowledge? 09:52AM

A I would have to check with Greg Ma.

Q Okay. Would you tell me, and you can use the exhibit if you choose to --

A Uh-huh. 09:52AM

Q -- the steps of collecting the clean and dirty samples and how they were transported to your lab. You can use the exhibit or you can just tell me what you know.

MR. TODD: Object to form. 09:52AM

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A Sure. The affidavits here of the folks that it looked like collected the samples and shipped the samples. These samples were collected with clean and unused styrofoam cups --

Q Okay. 09:53AM

A -- scooping it up.

Q Okay. Who collected the sample?

A This was collected by a person by the name of Gene Smith.

Q Okay. Do you know whether Gene Smith received 09:53AM any training on methods of sample collection for microbial samples?

A I do not. I do not know Gene Smith. I don't know if Gene Smith did or did not.

Q Do you have any documentation in your file 09:53AM that shows that he has been or received such training?

A Documentation for training would be most likely in Gene Smith's file, not my files. I would have to check with Greg Ma if there was any 09:53AM instruction given by IEH.

Q But you're not aware of any instruction?

A I'm not aware that there's -- instruction did or did not occur.

Q Okay. So you're looking at a page of Exhibit 09:54AM

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18 that's labeled with your Bates number 160?
A 161. I was looking for his name.
Q Well, it's right at the top of Page 160, isn't it, the affidavit?
A Sorry. 09:54AM
Q It's on both pages.
A Uh-huh.
Q So this affidavit -- is this all the information you have concerning how the sample was collected from the barns? 09:54AM
A This is all the information that I'm currently aware of Gene Smith. Again, I would have to check with Greg Ma about any additional correspondence or information.
Q How many samples did Gene Smith collect? 09:54AM
A She (sic) collected bedding from four or five places inside the house.
Q Okay. How many samples did you all receive?
A Two to four.
Q Somewhere between two and four -- 09:55AM
A Correct.
Q -- of clean and used bedding?
A I think if I recall correctly, it was two bags of the clean and two bags of the used, but I'd have to take a look. Ah, here. It was two of the clean 09:55AM

and one of the used.
Q Where are you referring to?
A Three. On Page 158.
Q And that's the affidavit of Victor Morgan?
A Correct, Victoria Morgan. 09:56AM
Q Victoria, and she is an employee of what?
A She is an employee of Conner & Winters. Oh. She's the assistant to John Elrod.
Q So she says she received two sealed bags of bedding material and one sealed bag of used bedding? 09:56AM
A Correct.
Q So there were two of the unused and one of the used?
A Correct.
Q Okay. Is that what you received at your lab? 09:56AM
A It is.
Q Were the bags labeled?
A I would have to check with Greg.
Q You don't recall at this point?
A I don't recall. 09:56AM
Q Okay. Let's go back to Gene Smith's affidavit on this exhibit.
A Okay.
Q Does he say anywhere that he labeled the bags of the materials he collected? 09:57AM

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A He does not.
Q Wouldn't typically a chain of custody state that the samples were placed in some container and labeled what they were?
A Yes, they would. 09:57AM
Q Who is Mr. Smith; is he an employee of one of the defendants?
A I have no idea. Oh, Simmons Food, he's employed by Simmons Foods. He's broiler manager of company-managed farms. 09:57AM
Q Okay. So how -- how does -- from what you've learned in this case, how did he collect the unused or what we've referred to as clean litter that you evaluated?
A He got a clean and unused eight-ounce styrofoam cup and from four or five different places inside the house scooped it up and put it in the bag. 09:58AM
Q Okay. Does it state that the styrofoam cup is sterile? 09:58AM
A It does not.
Q Would you typically have that type of information in a chain of custody on the -- from the sampling point?
A No, actually you would not. 09:58AM

Q You typically wouldn't have any indication as to whether it's sterile or not?
A Not on a typical chain of custody, which this is not. This is his affidavit.
Q Okay. It would be on the sampling protocol so whether -- it would usually require for sterilized -- 09:58AM
A Absolutely, but that wouldn't be reflected on a chain of custody.
Q Okay, and do you know whether or not the sampling cup he used was sterilized? I may have asked that before. I don't recall. 09:58AM
A Sir, I do not. The only information I have is --
Q What about the bag he placed it in; do you know whether or not it was a sterile bag? 09:59AM
A I do not.
Q Okay. Where did he collect these what he calls the clean bedding?
A Four to five places inside the house it looks like. 09:59AM
Q What kind of a house?
A Clean and unused from -- let's see. Farm 25, Simmons Foods -- no, it wasn't Simmons Foods. Farm 25. 09:59AM

Q Okay. Was -- was -- were these samples of this unused bedding material actually collected after they were spread out in a poultry barn?

A It appears that they were clean and unused. He states no chickens had been placed on the bedding. So it would appear that would be the case. 10:00AM

Q Okay. So is it possible that previous poultry operations in the barn could have contaminated this bedding material that was spread inside the barn?

A I do not know. 10:00AM

Q You don't know whether it's a possibility or not?

A I don't know what was on the barn before. I don't know if it was cleaned out. I don't know if it was disinfected. 10:00AM

Q Okay. Without that knowledge, Dr. Myoda, would you consider these to be representative samples of what unused or clean bedding material would have in them?

A I would consider these to be essentially, you know, grab samples. To take a look at what's representative in the IRW, you would, you know, at a minimum have to take a look at at least samples in each of the integrators' houses. I'm sure they -- everybody uses something a little bit different. 10:01AM 10:01AM

So, you know, to get a representative sample, at a minimum I would say that you would have to look, at least look at houses from every one of the integrators to get a representative sample.

Q And did you do that? 10:02AM

A We did not.

Q Okay. Do you believe that these samples, though, that were collected, not knowing how the barn was previously used or whether it was sterilized would be representative of clean litter 10:02AM from Simmons Foods?

A The samples were taken just as an exercise to see if the marker could be found in bedding material. To take a look at a representative sample, then the question becomes what is the 10:02AM frequency, what is the distribution, and then it becomes important to get a truly representative sample.

Q Would there be less likelihood of contamination if -- from poultry feces if the 10:03AM collection of the bedding material occurred prior to being spread out in the barn?

A It would depend, and I don't know if it was a disinfected barn.

Q You just don't know? 10:03AM

A I do not know.

MR. PAGE: Let's take a short break.

VIDEOGRAPHER: We are now off the Record. The time is 10:03 a.m.

(Following a short recess at 10:03 a.m., proceedings continued on the Record at 10:12 a.m.) 10:03AM

VIDEOGRAPHER: We are back on the Record. The time is 10:12 a.m.

Q Dr. Myoda, what was the purpose or objective -- what was the objective of collecting and testing the unused bedding material? 10:12AM

A The purpose was just one of presence-absence, was the signal found in the bedding material.

Q Okay, and if you don't have a sample that is not contaminated by poultry, is that purpose satisfied? 10:13AM

MR. McDANIEL: Object to the form.

A Well, you're asking me, you know -- you're asking a negative there. The purpose was to determine if it was -- if the signal was present and it was a clean sample. It was indicated to us it was a clean sample. 10:13AM

Q Although you're not sure if it was contaminated because it was spread out in a poultry 10:13AM

barn; correct?
A I'm not sure of the disinfection practices that occurred prior to the spreading in the house.
Q Given the information you've got here that we've reviewed -- 10:14AM
A Uh-huh.
Q -- the affidavit of Gene Smith, how it was collected, did you consider, based on this information, that you had an uncontaminated sample of bedding material? 10:14AM
A I don't have enough information to make that conclusion, sir.
Q Let me hand you what's marked as Exhibit 19, sir. Can you identify Exhibit 19?
A It is a page of a laboratory notebook. 10:15AM
Q Are you finished?
A It is a page out of a laboratory notebook.
Q Well, is it any particular laboratory notebook or just any lab notebook?
MR. GRAVES: Object to the form. 10:15AM
Q Let me ask you this: Do you recognize this as lab notes prepared from your lab?
A There's no indication that it is a lab notebook from my lab. I'm taking a look at it now to try to recognize the handwriting and to take look 10:16AM

project; correct?
A Correct.
Q Okay, and the middle entry there, do you see where it says 8-13-08?
A I do. 10:18AM
Q Is that -- are those her lab notes that relate to the unused litter samples we've been discussing?
A It is.
Q Okay. Would you read the first line next to 8-13-08, please? 10:18AM
A Total DNA extractions from clean rice hulls, Samples No. 1 and 2, are preenriched overnight in BHI at 37 degrees.
Q Okay. Would you explain to me what the process was on the clean rice hulls, which I guess 10:19AM is the unused litter --
A Uh-huh.
Q -- that's described there that you just read?
A She took the rice hull samples, the clean rice hull sample, enriched it overnight in BHI, put it in 10:19AM a 37 degree temperature and then took -- well, she took some of the liquid out and got all the DNA out of it. Every bit of DNA that was in the sample, she tried to do a total extraction, not of the whole sample but of that aliquot she took out. 10:19AM

Q That she enriched?
A Correct.
Q Now, is this enrichment that she performed on these unused samples part of the Harwood protocol?
A Well, this wasn't to duplicate the Harwood protocol. This was to take a look if that sequence was present. 10:20AM
Q So the answer is no?
A That portion, the answer is no.
Q Were there any negative controls taken for the enrichment media? 10:20AM
A You know, I really don't understand how you would take a negative control from enrichment media. I mean --
Q Well, when you enrich something, do you ever do anything to -- for QA/QC to determine whether or not your media is contaminated? 10:21AM
A Well, okay.
Q That's what I was trying to ask.
A Okay. Now you are taking a look. All our media has been QA/QC'd. We have protocols to QA/QC every lot of media. 10:21AM
Q Is there any reference here that they had a separate media that they used to do the enrichment of the clean hot rice hulls that was kept separate 10:21AM

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blew it up a little bit, but please look at any of this. Samples ID'd A1 and A2 are what, sir?

A A1 and A2 are an ATCC strain of the Brevibacterium casei.

Q Okay, and where did that come from? 01:02PM

A ATCC.

Q Well, okay. A lot of people don't understand what ATCC is. So could you please explain that for us, sir?

A ATCC is essentially a repository, a library, 01:02PM if you will, of known pure isolates of a variety of different bacterias. You can -- if you want a pure culture, ATCC is one of the sources you can call up and order and buy a pure culture that has been positively identified as a certain genus, species, 01:03PM strain.

Q Okay. So that wouldn't have been any bacteria that was collected by the State or the defendants in this case; correct?

A These two particular samples were purchased by 01:03PM or from ATCC.

Q By your laboratory?

A I would assume so, yes.

Q Okay. So -- but what I'm trying to understand is that these wouldn't be bacteria that were 01:03PM

collected as part of an environmental sample collected as part of the case; correct?

A These two were ATCC strains. You know, you buy them from ATCC.

Q A1 and A2? 01:04PM

A Correct.

Q And when you prepared those strains for PCR, what did you do?

A The strains would have been prepared. They would have been -- the details of those procedures 01:04PM would have been listed in the laboratory notebooks.

Q Can you tell us what they are?

A When generally you grow up the colonies, you suspend the colonies, lyse the cells, release the DNA. 01:04PM

Q Oh, you lyse the cells or did you do DNA extraction using a kit?

A I would have to take a look to see which protocol was followed in this case.

Q For qPCR, can you do a lysis method or do you 01:04PM have to use a DNA extraction kit?

A You can use a lysis method.

Q Does your lab regularly do that?

A Do we regularly lyse cells for PCR, qPCR?

Q PCR. 01:05PM

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A We regularly lyse cells.
Q Okay, and when you did the work in this case, did you do -- did you do DNA extraction or did you do lyse cell preparation of the DNA when you ran qPCR? 01:05PM
A I believe I just mentioned I would have to take a look at the lab notebooks to see which procedure we ran.
Q The Harwood protocols required DNA extraction rather than lysing, do they not? 01:05PM
A I would need to double-check, sir.
Q Where in your lab was this Brevi casei cultured and lysed?
A I would have to check, but I believe it would probably have been cultured in the general 01:06PM microbiology room.
Q Okay, and would it have been prepared for qPCR in that same room also?
A I doubt it.
Q Was that done in another room? 01:06PM
A It could have been done in the room that we had devoted to qPCR.
Q Did you do any of your qPCR preparation in the general lab room?
A I would have to take a look at the lab 01:06PM

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complementary to the primer set, a T matches A, et cetera. You know, in a primer set that's approximately 20 bases, if there was a four-base difference I could not expect it to react.

Q I want you to turn to Page 32 of your report, sir. Section 9.3.2.4, do you see that, sir? 02:34PM

A I do.

Q Is this where you discuss testing the biomarker against geese samples?

A I believe so, yes. 02:34PM

Q It mentions there's 16 samples. Did you provide all of the PCR results and qPCR results being performed on all 16 samples?

A I believe we did.

Q So it's your testimony that you ran PCR on all 16 samples? 02:35PM

A I would believe we did, sir.

Q Did you run qPCR on all 16 samples?

A I don't recall. I do not believe we did.

Q When you say here the results were that all 16 of the Canada goose samples tested positive for the biomarker, are you referring to the PCR analysis or qPCR analysis? 02:35PM

A I'm referring here to the PCR analysis that the appropriate fragment length was found and 02:35PM

reacted and the PCR reaction that reacted with the primers.

Q Other than the earlier exhibit when we looked at the qPCR and we saw two goose samples on it, do you know of any other qPCR analysis run on goose samples by your lab? 02:36PM

A I don't recall the samples that were run on the qPCR.

Q And I think on that one exhibit we did look at the goose samples run on qPCR. They did not indicate a positive result; is that correct? 02:36PM

A I would have to take a look back.

Q Would you please, sir?

A Uh-huh. I believe goose 2 -- there was some amplification in goose 2. 02:36PM

Q Was that in two of the two replicates, sir?

A It was.

Q And it was a very low result; correct, sir?

A Correct.

Q On Page 32 you refer to some beach samples; is that correct, sir? 02:37PM

A I do.

Q Could you tell me about those samples, how they were collected and where they were collected and who collected them, that type of thing? 02:38PM

notebooks, absolutely.
Q I'm talking about reviewing the page.
A I did not go line by line and read every word of every document in their notebooks with the materials that we produced to you. 02:53PM
Q So they'd give you a summary of their results; is that what they provided you?
A We would discuss some things in great detail, some things with different degrees of detail.
Q Let's go down to the entry on the first page here on 11-05. Would you read the first entry there under date 11-05? I don't know if I can read it. Maybe it's 11-2-05. 02:53PM
A Where are you?
Q It's right here on the first page entry. Maybe it's 11-2-5. 02:54PM
A Okay.
Q Okay. Can you read that out loud for the Record, please?
A Juanita Beach, beach, sand -- BAP, maybe PEA, MRS, very -- I'm sorry, I can't make out the word, very something. Juanita Beach grass, soil/goose -- 02:54PM
Q Before we go there, can you interpret any of that line there for us, tell me what is being performed in the lab based on that reference in the 02:55PM

lab notebook?

A I would interpret that as some of the methods he used or media he used in attempting to culture out bacteria from this sample.

Q Okay. What's the second line say? 02:55PM

A Juanita Beach, grass, soil/goose, no bands compatible to Brevi found, no further -- no further something testing.

Q Can you interpret that for me, please?

A The bands to me would then indicate that the 02:56PM PCR of this sample didn't amplify.

Q Turn to the next page, sir. I think you already testified that you believe that the samples that are listed on the top of the page reference 11-20-08 were the Juanita Beach samples that were 02:56PM collected; is that correct?

A Oh, I'm sorry. I would assume that that's what it's referring to, although I can't be sure. There's no reference, cross reference in the sample numbers. 02:57PM

Q It says you did DNR extraction on these samples. Did you run a negative DNA extraction control when you ran the PCR?

A Again, we used the QIAGEN kit. It specified that we run the kit according to the manufacturer's 02:57PM

instruction. If the manufacturer instructed to run a negative control, a negative control would have been run.

Q And if it didn't provide that, you didn't run a negative control; correct? 02:57PM

A We would following the manufacturer's instructions.

Q So does anything on the third page of the PCR Gel Sheet indicate that you ran a DNA extraction negative control when you did this PCR? 02:58PM

A These -- the procedures for the DNA extraction are referenced in the stool kit. You would have to refer to the stool kit to answer that question.

Q Okay. So there's nothing on this page, though, that indicates a DNA negative control was placed on any of the lanes on this PCR gel? 02:58PM

A Oh, well, you asked about the extraction, and there's no indication that it was or was not done.

Q If there -- if it was performed, wouldn't there be a separate lane that would identify it as a DNA negative extraction control? 02:58PM

A I believe I testified earlier the DNA extraction, a negative control with the extraction would be focused on making sure that the extraction assay worked. 02:58PM

Q Wouldn't you typically then run that extraction, the negative extraction to see if it amplified to determine whether or not there was any contamination in your lab?

A I don't believe that's how you would determine contamination in your lab. 02:59PM

MR. PAGE: Let's take a break.

VIDEOGRAPHER: We are now off the Record. The time is 2:59 p.m.

(Following a short recess at 2:59 p.m., proceedings continued on the Record at 3:10 p.m.) 03:09PM

VIDEOGRAPHER: We are back on the Record. The time is 3:10 p.m.

Q Dr. Myoda, I want you to look on Exhibit 40 and then turn to the gel sheet and tell me whether any of the beach samples amplified under PCR. 03:09PM

A It would appear that in Lane 1, 2, 3, 4, 5 -- let's see -- Lane 5 that the sample did amplify.

Q Okay, and for Lanes 2, 3 and 4 they did not?

A It would appear so. 03:10PM

Q So one of the four samples amplified?

A That would be correct.

Q Your testimony here, on the Record here in your report says the sand samples tested positive for LA 35. Given what we just looked at, would it 03:10PM

A Actually, no. It's been redacted.
Q So the information about who collected and where they're collected is not being provided; is that correct?
A That is correct. 03:26PM
MR. TODD: I don't think you actually asked where they were collected. I'm sorry. Can you divulge the location of the slaughterhouse; would that help you?
A Would that help? 03:26PM
Q Where was the slaughterhouse located?
A I'd just prefer -- quite frankly, I have a confidentiality agreement, and I will not address it any further.
Q Dr. Myoda, how many of these sponge samples 03:26PM tested positive for PCR?
A I believe it was -- I initially thought it was one of two, but I believe it was two of four now. I would have to check back on or in the notebooks.
Q Your original -- okay. So you believe there 03:27PM was two of four; is that your best recollection?
A I think that was, you know, the updated figures.
Q Do you know whether or not a DNA extraction control was run with the PCRs? 03:27PM

A I would have to refer to the lab notebook.
Q Do you know, sir, whether or not these cow samples were run with qPCR?
A I do not recall.
Q Let me hand you what's been marked as Exhibit 41 and ask you if you can identify that group of exhibits for me, sir. 03:28PM
A This was the page off of Vika's lab notebook. I believe it was also marked as exit -- or part of Exhibit 40. 03:31PM
Q Okay. The first page is also part of Exhibit 40; is that correct, sir?
A That's correct.
Q Does that first page reference the cowhide sample work? 03:31PM
A It does.
Q And where does it reference it?
A In the middle of the page.
Q Okay. What's the second page of the exhibit?
A Their receiving log sheet when the samples came to us. 03:31PM
Q Okay, and the third page?
A The third page is essentially descriptions of the times that -- of the date the samples were taken that correspond to each sample. 03:32PM

Q Okay, and the next page?
A The next page is a PCR Gel Sheet.
Q Okay, and the page after that?
MR. TODD: Just to make sure we're all on the same page, what's the Bates number? The next page for me is Page 1 again. What's the Bates number on the bottom of the Gel Sheet? 03:33PM
A Well, the one I looked at was 3661 and the next one is 3660, so they're --
Q The next page is 3660? 03:33PM
A My next page is 3660.
MR. TODD: That's not what I have.
MR. PAGE: Let's go off the Record and let me see if I can get this exhibit together.
VIDEOGRAPHER: We're now off the Record. 03:33PM
The time is 3:33 p.m.
(Following a short recess at 3:33 p.m., proceedings continued on the Record at 3:37 p.m.)
VIDEOGRAPHER: We are back on the Record.
The time is 3:37 p.m. 03:37PM
Q Dr. Myoda, I'm going to -- at the break I made sure our exhibits were coordinated. So I'm giving you Exhibit 41, which has one, two, three, four, five, six pages; correct?
A Correct. 03:38PM

Q And the first page is Myoda 3651 Bates number?
A It is.
Q Second page is Myoda 3671 Bates number?
A Correct.
Q Third page is Myoda 3659 Bates number? 03:38PM
A Correct.
Q The next page, fourth page is Myoda 3661?
A Correct.
Q And then the next page is Myoda 3660?
A Correct. 03:38PM
Q And the last page there is no Bates number, and that is an Excel spreadsheet of the qPCR for these samples taken from the Cepheid file; okay, sir?
A Okay. 03:38PM
Q Now, turn to the first page, sir, of the exhibit. You mentioned earlier I think that the first page in the middle shows the cattle sponge samples?
A I did. 03:39PM
Q Okay. Was DNA extracted from these samples?
A It was.
Q Okay, and there were four samples, correct, total of the cow?
A Yes. 03:39PM

Q Okay, and those numbers are shown in the middle of Page 1, which is Exhibit 41?
A Correct.
Q And they're Sample 65019-1, -2, -3 and -4; correct? 03:39PM
A That is correct.
Q Okay, and it says here you've extracted pursuant to QIAGEN DNA extraction kit; correct?
A Correct.
Q Does it say anything here that a negative DNA control sample was taken? 03:39PM
A It says we used the QIAGEN DNA stool kit according to the manufacturer's instructions. Again, we refer to their instructions to --
Q Okay. Let's look at the second page. 03:40PM
A Uh-huh.
Q What is that, sir?
A The second page is the sample -- the log-in sheet that we generate when we receive these samples. 03:40PM
Q Okay. Does it indicate that a hold time was created in six hours between the time the sample was collected and the time you logged it in?
A Well, the samples were collected on 11-17 and we received them at 11-18. 03:41PM

Q Can we distinguish any difference?
A Well, there's certainly a difference in the concentration. Lane 5, the positive control has -- was loaded up with a great deal more DNA.
Q Can you distinguish any difference in the size, base pair size between these samples? 03:53PM
A Taking a look at this, it's difficult to make that determination. To me, I would determine that they were approximately the same size.
Q Okay. Let's look at -- I'll state to you, sir, for the Record that the next page, instead of Page 5, in my haste, was part of the Juanita Beach samples, PCR gel. 03:54PM
A Oh.
Q So we're going to skip over that -- 03:54PM
A Okay.
Q -- and go to the last page of the exhibit, which I think I mentioned to you earlier is an Excel printout from your Cepheid files --
A Okay.
Q -- for the two of the -- for the -01 and -03 samples that you identified as amplifying on the gel. Do you see that, sir?
A I do.
Q Okay, and do they amplify in the qPCR, sir? 03:55PM

A Well, sir, I would need to take a look at the Excel spreadsheet that these were generated on. This is the first time I've seen this graph, and I would need to take a look at everything that was associated with this before I make a determination on.

Q Does this printout show that the no template has amplified?

A Since this is the first time I've seen this representation of the data, I would -- before I would comment upon it, I would like to take a look at the background data that was used to generate this.

Q Well, this is an Excel spreadsheet generated from the Cepheid files, your files, sir. If you accept my representation as being true --

A Well, sir --

Q If you let me finish, please, Mr. Myoda.

A I apologize for interrupting.

Q It's quite all right. If you accept that as true, would this printout indicate that the -- for the qPCR, there was contamination because the no template also amplified along with the plasmid as well as the cowhide samples?

A Again, before I would make a determination, I

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would take a look at everything. We did not use Excel spreadsheets. So this data is not the data or at least in a format that we provided.

Q Okay. Do you recall whether or not when you ran the qPCR -- this is it. Okay. Well, we did have it. I just filed it in the wrong place. 03:57PM

A Excellent.

Q Let me hand you what's marked as Exhibit 42. I'll put it right down here and it will be okay. Okay. Here you go. 03:57PM

MR. PAGE: Here's one for John.

Q Sir, this exhibit was put together --

MR. TUCKER: Is this No. 42?

MR. PAGE: Yes, sir.

Q -- showing a screen shot of your Cepheid files, and then we printed out the table that's on the first page, and then we used the information from the first page printout to extract just some of the information for a qPCR run on the third page, sir. So I think if you looked at the Excel spreadsheet from Exhibit 41 and then looked at the data with Exhibit 42, we may have the information you need to do your evaluation, and I guess my question is, sir, first of all, whether or not the negative control amplified. 03:58PM 03:59PM

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A When you take a look at this -- and I'll refer you back to the earlier testimony. When we looked at what the CT values were, you look at the controls, the no template controls and the CT values are at 37.97 versus 38.86. So those were the CT values, SYBR Green CT values. When you take a look at the standards, the plasmids and some of the other samples, the CT value was there, which was -- you know, the critical threshold values were 16.6, 17. So there's a substantial difference in the amount of amplification there was. You know, this graph here is going to represent the melt curve, not the amount of amplification there was. So there was a substantial amount. I would characterize this as a very misleading interpretation of the data that is reflected in these sample runs. 03:59PM 03:59PM 04:00PM

Q Okay. Can you -- but you'll agree with me, sir, that there was an amplification of the negative control in these qPCR runs?

A Well, when you take a look at the critical threshold value and you evaluate it, generally accepted threshold values are in the range of 30, this exceeded that, so it would be considered -- when you base it against a CT value, a no amplification of this is not the signal that 04:00PM 04:00PM

illustrates the amount of amplification that did occur in the PCR run. This is a melt curve, not the total fluorescent signal.

Q Don't you need both the CT value and the melt curve to do PCR and qPCR evaluation? 04:01PM

A Some folks use the melt curve. Some do not.

Q Did your lab use the melt curve or not?

A We take a look at all the data that we generate.

Q Does the Harwood protocol provide that you look at the melt curve for qPCR evaluation? 04:01PM

A The Harwood protocol looks at the melt curve to answer the question of selectivity, not the amount of amplification that occurred.

Q You mean specificity? You say selectivity. 04:02PM Do you also mean specificity?

A Specificity.

Q Would you turn with me to Pages 29 and 30 of your report, sir? Actually let's turn to Page 28.

A Okay. 04:04PM

Q At the end of -- the bottom of the page, it appears to me that you're stating that the melt curve cannot be used for specificity; is that correct?

A In this assay, with the length of this target, 04:04PM

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